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Further Evidence on Compensating Differentials and the Gender Gap in Wages

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One explanation for the sex gap in wages is that women choose to work in jobs that are pleasant, safe, and comfortable. If men are paid a premium for working in dirty, noisy, or dangerous jobs, then part of the sex gap in wages may reflect men's rewards for performing more hazardous, onerous, or distasteful work. In other words, women garner a higher proportion of their overall compensation package in amenities, including such intangibles as pleasant working conditions, whereas men take home larger paychecks.

Extra pay for working in undesirable settings or performing unpleasant tasks is referred to by economists as a compensating differential. This means that the differential in pay between two jobs reflects an offsetting difference in the nonmonetary aspects of employment. One receives higher pay if the job is less desirable—other things, such as educational requirements, being equal. This idea is quite central to labor economics (Rosen, 1986) and dates back at least as far as Adam Smith (1776/1976).

Yet, despite the prominence accorded to the compensating differentials thesis in economic theory, there is actually little empirical support for it. In an earlier article (Jacobs & Steinberg, 1990), we tested this notion with detailed data on a wide range of working conditions. Our results indicated that little of the sex gap in earnings is due to undesirable

working conditions. There are several reasons for this finding. First, undesirable working conditions are not the exclusive preserve of blue-collar, male-dominated jobs. Jobs in which women predominate also are characterized by a number of undesirable working conditions. Second, undesirable working conditions are not consistently associated with higher wages. Wages in positions with undesirable working conditions are often lower than wages in more attractive jobs.

And third, specific undesirable working conditions, such as strenuous physical activity, were found to actually lower the wages of a job, net of its other characteristics. Even when compensating differentials were observed, they were small in magnitude compared with other factors influencing pay. We also summarized the results of eight other comparable worth studies that found little support for the idea that sex differences in working conditions explain the wage gap between male-dominated and female-dominated jobs.

In this study, we further explore this question by considering other models of the relationship between working conditions and wages under circumstances in which the undesirable working conditions are extreme or where there are clusters of undesirable job attributes. Perhaps it is not undesirable working conditions per se that have a positive effect on wages, but rather undesirable working conditions that are of central significance to the character of the job. By conducting a further exploration of the compensating differentials perspective, we provide a more rigorous test of this theory and its role, if any, in explaining the sex gap in earnings.

Most studies consider each working condition separately. The functional form of the regression equations estimated in such studies assumes that each working condition has a separate, additive effect on earnings. Moreover, studies have generally assumed the relationships are linear (with respect to the log of earnings). Thus, the first increment of unpleasantness has an equal effect to the last increment's impact.

Yet it is probably more realistic to assume that it is only extreme conditions that require extra rewards. Take the case of shift differentials, which are common in nursing compensation practices. The frequent need for employees to stay an hour late for shift changes may not be sufficient to justify extra pay, but regularly requiring employees to work the night shift may warrant a shift differential. Thus, nurses are paid 10% to 15% more if they work at night or on the weekends, compared to working during the day (personal communication, Noelle Andrews, 1993). Similarly, driving a truck may involve some risk of injury or accident, but it

is a risk many take for granted, as it is similar to the risk people take driving their car to the grocery store. However, cleaning windows on skyscrapers involves risks that fewer people are willing to take, and thus may produce a wage premium. Or, to provide a final example, nurses' exposure to needle sticks that may result in hepatitis or AIDS infection may be perceived as so risky that extra pay is necessary as an incentive to produce a sufficient supply of nurses (Clever & Omenn, 1988; Zoloth & Stellman, 1987). We examine this first issue—whether workers exposed to extremely undesirable working conditions receive higher wages—by an analysis of the potential curvilinearity in the relationship between wages and working conditions.

The second issue we address is whether clusters of undesirable job attributes combine to produce higher wages. As our analysis will show, job attributes often come in clusters. Lumberjacks, for example, work outside, often in cold conditions, and are faced with a risk of injury from falling limbs. The combination of these job characteristics may warrant a wage premium, whereas any one of these factors might not. We assess for the first time whether combinations of undesirable working conditions are associated with a wage premium.

The next section briefly summarizes a sociological approach to employment systems. Because we do not abide by the compensating differentials analysis of labor markets, we offer an alternative sociological perspective. In this section, we also highlight differences between sociological and economic perspectives. We then review the evidence relating to the compensating differentials thesis. Next, we explore the issue of gender differences in work-related preferences. Finally, we turn to data analysis from *The New York State Comparable Pay Study* (Steinberg, Haignere, Possin, Chertos, & Treiman, 1985).

A Sociological Approach to Work

Sociologists approach the study of work somewhat differently than do economists. Although sociologists often use the same data sets as economists and often discuss economic approaches in great detail (e.g., England, 1992), sociologists continue to differ from economists in their emphasis on context, politics, and culture.

Whereas economic theory in the abstract focuses on the intersection between supply and demand, in practice labor market economics has to a remarkable extent become the analysis of labor supply. The theory of

labor economics holds that the labor market is efficient and consequently that differences in earnings among workers are due to differences in skills and preferences. In other words, differences in earnings are a function of choices individuals make prior to entering the labor market. Most labor economists hold to this position, even in the face of contrary data (Madden, 1984). Demand-side factors are occasionally invoked—for example, to explain the growth in earnings inequality in recent years (e.g., Goldin & Margo, 1992). But the demand side of the labor market is rarely if ever used as an explanation for earning differences between groups. In other words, most labor economists believe that discrimination, in the sense of firms paying one group less than another equally productive group, does not exist or, if it does, it will not exist for long.

Sociologists, particularly those studying gender, race, ethnic, and other inequalities, assume that many actors in the economy discriminate among groups to various degrees and that some fraction of group differences may be accounted for by labor market discrimination. Several have examined directly how sex segregation and unequal rewards between men and women grow directly out of production strategies and employer decision making (Acker, 1989; Baron & Newman, 1989; Bielby & Baron, 1987; Cockburn, 1991; Cohn, 1985; Milkman, 1987; Reskin, 1988; Smith, 1984; Tomaskovic-Devey, 1993). Sociologists have proposed many explanations for how discrimination can persist despite market pressures that in theory should erode such distinctions. These explanations include the interdependence of workers, the prevalence of long-term employment relationships, skills that are often specific to particular firms and groups of workers, and the insularity of many firms and many workers from market pressures, among others (Jacobs, 1989). Recent studies have identified the role of managerial power (Cohn, 1985; Milkman, 1987), male power (Acker, 1989; Cockburn, 1991; Reskin, 1988), institutional inertia (Baron, Jennings, & Dobbin, 1988; Baron & Newman, 1988), and gendered institutions (Burton, 1991; Steinberg, 1991) in maintaining segregation and unequal rewards. For example, Bielby and Baron (1987) conclude that statistical discrimination does operate in the labor market, but that it is neither as rational nor as efficient as economists believe. They found that for some jobs, physical demands were listed as a rationale for hiring men, yet detailed job analyses revealed that there were few actual demands for the use of physical strength. These factors reduce the extent to which employers can easily substitute low-wage workers for otherwise equivalent high-wage workers, a substitution that is at the root of the economic model of efficient labor markets. But discrimination is only one aspect of sociologists' focus on the demand side of the labor market.

Sociologists who study employment systems consider both the decisions of individuals and the context in which work is conducted (for programmatic statements, see Baron & Bielby, 1980; Block, 1990; Kalleberg & Berg, 1987; Kalleberg & Sorensen, 1979). The economics of labor markets is based on an analogy to an auction, where an item is sold to the highest bidder. Yet the social context of work is usually more complex than one would find in a spot-market situation, which is characterized by a once and for all transaction principally based on price and not quality. Relations at work are typically enduring quality matters, and motivation must be elicited. Thus employment systems emerge, and rules are developed for selecting, training, evaluating, motivating, promoting, and jettisoning workers. A set of procedures that "work" become formal policies, and these serve as precedents for subsequent conflicts over fairness and legitimacy. These systems develop their own logics and histories, some recorded, others simply understood.

Power relations also enter into the construction and maintenance of these employment systems. Once in place, group interests become attached to these systems and they tend to remain in place until such time as either economic constraints make their continuation infeasible or group pressure undermines the legitimacy of such systems and renders them too costly—in terms of employee morale—to continue. For example, job evaluation systems began to be used widely during and after World War II (Baron et al., 1988). They remained intact until the late 1970s and early 1980s, when the demand for equal pay for work of comparable worth gained political visibility. Advocates of reform linked the source of wage differentials between historically male and historically female jobs to job evaluation procedures; even without referring to men or women, these procedures incorporated a cultural bias about the value of work that ensured significant wage advantages to jobs historically occupied by men (Remick, 1979; Treiman, 1979). Yet, as Acker's (1989) in-depth account of the Oregon Pay Equity initiative reveals, the gender bias in compensation practices largely remained intact, resulting in the maintenance of wage differentials between historically male and historically female jobs. Despite the efforts of feminist reformers, the old system and the inequality it produced were relegitimated, and some incumbents of the lowest-paid female jobs received modest pay adjustments. Thus, as gender bias is uncovered, wage hierarchies are reproduced and relegitimated. Proponents have proved powerful enough to put

pay equity on the political map, but not powerful enough to achieve the goals of this reform (Steinberg, 1991).

Economists have recently attempted to tap some of this complex social reality with the concept of implicit contracts, but (a) this has principally been applied only to a limited range of work-related issues, such as the length of employment and the trajectory of wages over the life course (Rosen, 1985); and (b) we are not persuaded that these economic models provide a persuasive account of the origins or dynamics of workplace practices. These extensions of economic theory continue to rely on the individualist social-psychological assumptions underlying the rest of economic theory.

Sociologists believe that structural and cultural context matters in part because an individual's productivity inheres in the job setting as much as in the person. Many historically specific social factors structure the work relationship, including geographic location, organization, occupation, and even individual job attributes.

As the examples cited above indicate, sociologists have devoted a great deal of attention to organizational factors that influence career dynamics and the distribution of rewards (for example, Baron, 1984; Baron & Cook, 1992). Labor contracts and career experiences in large firms with highly differentiated internal employment systems operate very differently from those found in small firms. Recruitment patterns, screening procedures, earnings, benefits, the degree of formalization, and many other key aspects of work differ dramatically across employment settings. Economists, of course, have noticed differences in earnings across firms and industries (Krueger & Summers, 1987). These interindustry differences cannot be dismissed as simply due to the self-selection of more productive workers into higher-paying sectors. Yet this finding has not resulted in a shift in the basic premises of economic theory. Despite contrary empirical evidence, economists tend to downplay the role of market structure in determining outcomes for workers.

Occupations represent another facet of the work situation that has a significant bearing on work outcomes. Occupations often have their own internal stratification systems, and some occupations are more closed than others. As both Milkman (1987) and Strober (1984) have demonstrated, employers decide the sex type of an occupation based on labor costs and then use stereotypes about gender norms to legitimate their practices and obscure their underlying motives. Sociologists often study gender inequality within particular occupations. Indeed, this volume includes five such chapters. Sociologists tend to pay much more attention to particular occupations than do economists (but see Hochner, Granrose, Goode, Simon, & Appelbaum, 1988, for a notable exception).

Even occupations represent overly broad aggregations, as far as many sociologists are concerned. This attention to the basic building block of the employment system—the individual job— stems in large part from Bielby and Baron's striking finding (1984) that jobs are far more segregated by sex than are occupations or industries. Although there is a great deal of interest in the job as the unit of analysis, research has been slowed by the paucity of available data, especially at the level of the firm. Our study (along with the Tomaskovic-Devey chapter in this volume) is one of the few academic reports analyzing gender inequality conducted at the job level.

Sociologists tend to see employment relations as reflecting power relations, as well as pure market forces. Wages are not simply set by workers' accepting what is offered; they are contested both individually and collectively. The most obvious form involves collective bargaining between unions and management, which influences not only the wages of a company's workers but also wages in firms seeking to avoid unionization. Professional associations have often played the same role. Perhaps less recognized is the fact that administered wage systems also are replete with political influence. Large firms in the United States and elsewhere have developed compensation policies, such as the one discussed above for the state of Oregon, that are designed to promote internal equity as well as external competitiveness. These systems are subject to political influence in many ways: the selection of factors to be used, the weights assigned to the factors, and the application of the system to many nonbenchmark jobs. All of these involve political decisions that affect how people are paid (see Steinberg, this volume). And initiatives to modify such systems have often been stymied by many obstacles, technical and political.

A final area of difference between sociologists and economists is in the significance accorded to and the treatment of culture. Economists take preferences as given. Sociologists view preferences as partly what individuals bring to social situations and partly how individuals adapt to preexisting expectations. Economists take preferences as fixed, whereas sociologists recognize that preferences often change in response to experiences in the workplace, the influence of friends and family, and changing values and mores in society (Jacobs, 1989; Kohn & Schooler, 1983).

Sociologists maintain that culture often lags behind other types of social change and can constrain contemporary actors in ways not acknowledged by economists. Thus preferences and the choices individuals make based on preferences do not emerge in a vacuum. They are, in no small part, the product of the prevailing distribution of opportunities in the labor market and of individuals' realistic perceptions of their options.

Gender interacts with context, politics, and culture in many ways. Women are disadvantaged in their structural position (that is, access to good jobs), in their political leverage to argue for higher pay, and in the cultural resources needed to make claims for higher rewards. Acker's study (1989) documents these disadvantages in remarkable detail. We believe these categories—context, politics, and culture—capture much of the voluminous sociological literature on gender inequality in the workplace, a claim that we can only put forth here, as we do not have space sufficient to thoroughly document these claims in this chapter.

The sociological model of the labor market we have just outlined posits that compensating differentials are the exception and not the rule. Jobs with undesirable working conditions are unlikely to be concentrated in the most favorable organizational and occupational contexts, are unlikely to be located in politically powerful positions, and are unlikely to have access to the cultural resources needed to maximize their earnings. If a wage premium were found to be related to undesirable features of a job, according to the sociological perspective on the labor market, it would most likely be due to the unique structural, political, and cultural resources of particular groups of workers.

Studies of Compensating Differentials

The notion of compensating differentials has been applied to diverse workplace amenities and disadvantages, including the risk of injury and death (Hwang, Reed, & Hubbard, 1992; Olson, 1981), the risk of losing one's job (Hamermesh & Wolfe, 1990), retirement benefits (Allen, Clark, & Sumner, 1986), and shift work (Kostiuk, 1990). Other studies include a range of job attributes in a single analysis (Barry, 1987; Duncan & Holmlund, 1983; Reed & Holleman, 1988; Filer, 1985, 1989). The results of these investigations often contradict the compensating differentials logic: Jobs with undesirable attributes frequently pay less than those with more attractive features (Brown, 1980; Rosen, 1986; Smith, 1979).

Several recent studies affirm the compensating differentials thesis (Duncan & Holmlund, 1983; Hwang et al., 1992; see Rosen, 1986, for a review and discussion). These studies follow individuals over time to see if changes in pay are offset by changes in working conditions. These studies show that when people change jobs, they typically do not move to less attractive jobs without some supplemental compensation. In other words, some workers move to more attractive jobs at a cut in pay, whereas others move to more remunerative but otherwise less attractive jobs. Yet this reseach does not show that the pay disparities between jobs are equalized by the presence or absence of amenities. Heroic assumptions regarding the efficiency of markets are necessary to reach such a conclusion, and it is such assumptions that are themselves at issue.[1]

Compensating Differentials and Workers' Preferences

How do workers' preferences relate to the issue of compensating differentials? From an economic standpoint, the existence of a compensating differential requires substantial agreement on the undesirability of a given job attribute. Moreover, that attribute must be important enough to lead some people to avoid taking the job as a result of it. If there were substantial heterogeneity of preferences with respect to a particular set of job attributes, then that aspect of a job would be unlikely to produce a wage premium. Consider a hypothetical example. Let's say some people prefer office jobs whereas others prefer to work outdoors. If there were an adequate supply of both types of workers, then neither office jobs nor outdoor work would require an extra wage premium to entice workers (above and beyond whatever training might be needed). Thus, in order to produce a compensating differential, there must be wide agreement that a given job attribute is undesirable, and it must be sufficiently salient that people would be discouraged from taking a job because of it. Examples of job attributes considered candidates for supplemental pay include night work, dirty work, risky work, high-stress jobs, and physically fatiguing labor. Some individuals may be more inclined than others to accept such working conditions. Weston (1990), for example, found that male construction workers often work without their safety gear as a sign of courage and toughness, constructing masculinity in the act of risk taking. However, these undesirable working conditions are theorized to require extra wages only if they make it difficult to attract sufficient numbers of qualified individuals to fill these jobs.

How do these considerations relate to gender differences in preferences? If women and men preferred different types of jobs, then neither men nor women would be expected to receive a premium for doing the type of work they prefer. For example, if women prefer to sew and men prefer to chop wood, then neither sewing nor wood cutting would pay extra unless there were excessive demand for one type of activity over the other. Because unemployment rates for men and women are quite similar, we don't believe that men are paid more because the types of work they prefer are in more demand than women's work.

There would be a sex-linked wage premium, however, if neither men nor women liked to chop wood, and if only men were willing to do so. In this case, both groups seek to avoid a given activity, but one group is more willing to engage in it in exchange for extra wages. Another way of making this point is that men and women find the same types of work distasteful, but that men are more willing to put up with distasteful work in exchange for higher wages. In essence, this logic assumes that men place a greater emphasis on making money, and women place a greater emphasis on working in pleasant conditions.

This assumption, however, does not receive significant empirical support. Survey data suggest that working women rank income as high as men do on a list of factors for choosing a job (as reviewed in Jacobs & Steinberg, 1990; see also Jacobs, 1992). This type of analysis has been applied to explaining the relatively low pay of workers in the nonprofit sector, which is predominantly staffed by women (see Steinberg & Jacobs, 1994). It has been suggested that nonprofit workers are willing to accept lower wages because they place such a high value on working in a socially beneficial setting. In this case, workers trade off a positive amenity—socially redeeming work—in return for wages. Here again, this explanation falls short for a number of reasons. First, the conclusion is inferred from discounting other explanations, rather than on the basis of direct evidence (see, for example, Preston, 1989). Second, in order to account for the concentration of women in the nonprofit sector, this argument would have to assume that women are less interested in money than men. As we noted above, survey evidence is generally inconsistent with this thesis.

Third, the preferences explanation in general assumes more stability in preferences than actually exists. Data on career aspirations show substantial inconsistency between individuals' preferences and jobs actually pursued—one study found that occupational aspirations poorly predicted occupational behavior 10 years later (Jacobs, 1989). Fourth, this approach ignores the feedback between opportunity and preferences. Preferences are not attributes that spring into individuals' heads at one moment and remain fixed forever. Rather, they are actively shaped and reshaped throughout prelabor market and labor market years by many factors and contingencies, a good many of which emerge out of labor market experience (Gerson, 1985; Schultz, 1990). Those who work in historically female jobs and, by extension, in historically female sectors typically do not "choose" to work for lower wages but are constrained to accept jobs characterized by a wage structure that is gendered and that devalues the feminine (Reskin & Padavic, 1994).

Thus there are good reasons to be skeptical of the compensating differentials logic and its applicability to the gender gap in wages. Let us now turn to empirical data to see if the proposed specifications of the compensating differentials model improve the fit between predictions and results.

Data and Methods

In this chapter, we focus on the determinants of the wage structure of jobs by examining those attributes of a job title that affect its salary grade. In the New York State Civil Service system, the job title is the appropriate unit of analysis. Like most other public sector employers, and many large private sector firms that rely on some form of job evaluation for salary setting, New York State bases its compensation policies exclusively on the job, not the individual. Individual salaries are a strict function of the job title and seniority. Every employee in a given grade level is accorded the same increment, strictly dependent on years of service. There are no merit raises or other elements of discretion in the setting of salaries. Thus the determinants of the compensation of each job title are the determinants of the compensation of its incumbents. Consequently, in this context, there is no confounding of the attributes of individuals and the rewards allocated to the position.

To obtain information on job content, Steinberg et al. (1985) sampled all employees in each job title with under 20 incumbents; in titles with more than 20 incumbents, at least 20 incumbents were sampled. For female-dominated and disproportionately minority job titles, up to 150 incumbents were sampled. The sampling procedure and rationale is de-

scribed in detail in Steinberg et al. (1985). In all, *The New York State Comparable Pay Study* surveyed 25,852 incumbents in New York State Civil Service jobs to rate the characteristics of 2,582 job titles.

Employees rated the attributes of their own jobs. Pretest results indicate that employee responses correlate highly with those of supervisors (Steinberg et al., 1985). Incumbent responses for each job title were averaged. (For some variables, the percentage responding in a particular way was used.) This averaging process produces highly reliable measures for each job title. For this analysis, we limited our job sample to 1,605 job titles with four or more incumbents in order to have a stable measure of percentage female.

Eighty content characteristics were collected for each job title. The items were designed deliberately to capture the widest possible range of the work actually done in the New York State system. Every effort was made to measure as completely as possible the range of content of both female-dominated and male-dominated positions, correcting for gender bias in the array of job-content information collected. The specific measures were drawn from (and went beyond) 20 prior job-content surveys used primarily by compensation consulting firms. The survey was refined in a pretest of 1,862 respondents. (A more detailed discussion of the survey instrument, rationale for items, and pilot test is available in Steinberg et al., 1985, Chapters 3 and 4.)

Fourteen scales were constructed to tap the main dimensions of job characteristics and to avoid problems of multicolinearity. The 14 scales were derived through a factor analysis of the 80 job characteristic measures. The reliability measures of the factors are unusually and uniformly high (Steinberg et al., 1985, Chapter 7). Working conditions was one of the factors. As we are interested in a more detailed examination of working conditions, we disaggregate this factor for the present analysis. In addition, we include 10 additional job-content variables that were not included in the 14 factors. Table 4.1 lists the variables used in the analysis.

Our study predicts the salary grade of job titles from the attributes of these jobs in a multiple regression framework. The dependent variable in the analysis is the salary grade of the job title. As noted above, in the New York State Civil Service, wages are strictly a function of salary grade and seniority.

We included in our analysis controls for management and supervisory responsibility, education and experience requirements, and other indicators of job skills. Specific variables include: management/supervision,

Table 4.1 List of Variables Selected From the New York State Comparable Pay Study

A. Salary, Sex, and Race Composition

1. MSG or Mean Salary Grade, which is the dependent variable for this analysis
2. PFEM or Percentage Female, which allows a direct test of the effect of sex composition of a job on its salary grade
3. PM or Percentage Minority, which allows for a direct test for potential wage discrimination based on minority incumbency

B. Working Conditions Measures

1. An Unfavorable Working Conditions Index, based on six questions, including:
   2. Hot or cold
   3. Cleaning others' dirt
   4. Fumes
   5. Loud noise
   6. Strenuous physical activity
   7. Risk of injury
8. Contact with Difficult Clients: a composite index based on four questions: the seriousness of client problems; dealing with emotionally troubled clients; the number of patients or inmates served; and handling sick or injured clients
9. Communication with the Public: a composite index based on four questions: answering questions or complaints from the public; dealing with upset clients or public; and dealing with nonagency personnel
10. Stress: a composite index based on six questions: feeling rushed; conflicting demands; telling people what they don't want to hear; feeling pressure to meet deadlines; the need to learn skills just to keep up; and having to make quick decisions
11. Job Autonomy: a composite index based on three questions: freedom to decide how to complete the assigned tasks; the order of tasks; and the speed of work
12. Working with sick patients
13. Repetition (doing the same thing over and over)
14. Unexpected problems
15. Close supervision (being told what to do)

(Continued)

Table 4.1 (Continued)

C. Job Content and Educational Control Variables

1. Management/supervision: a composite index based on 11 questions: level of supervision; numbers supervised; prevention of wasting time; hiring and firing responsibility; scope of planning responsibility; estimation of training needs; substitute for boss in supervision; settling job disputes; finding replacements for no-shows; setting operating practices; keeping employees informed of work policies
2. Education required for position
3. Data entry requirements: a composite index of three questions: entering data; editing data; verifying data
4. Group facilitation: a composite index of three questions: planning meetings/workshops; leading meetings/workshops; giving speeches
5. Computer programming: a composite index of four questions: writing original programs; doing systems programming; using packaged programs; doing systems design
6. Fiscal responsibility: a composite index of three questions: propose money for agency/facility; spend money within budget; propose budget for unit
7. Consequence of error: a composite index of two questions: mistake hurt good name of agency; mistake hurt good name of unit
8. Time effort: a composite index of two questions: working overtime without compensation; working weekends without compensation
9. Dealing with information
10. Writing complexity
11. Experience requirements for position
12. Physical coordination
13. Filing responsibility
14. Responsibility for equipment

data entry requirements, group facilitation, computer programming, fiscal responsibility, consequence of error, time effort, physical coordination, responsibility for equipment, dealing with information, writing complexity, and responsibility for filing.

We present descriptive statistics for the Working Conditions Index but employ its six components in the multivariate analysis. These measures encompass the standard questions about hazards and bad physical conditions that have been used in most research on compensating differentials: strenuous physical activity, fumes, risk of injury, working in hot or cold conditions, working near loud noise, and cleaning others' dirt.

Variables (8) through (15) in Table 4.1 tap other undesirable job attributes that have rarely been included in an analysis of compensating differentials. Measures (8) through (11)—contact with difficult clients, job stress, lack of autonomy, and communication with the public—are factors that combine variables. Single-variable measures are used for working with sick patients, repetition, unexpected problems, and close supervision. We consider each measure to capture an aspect of work that could reasonably be regarded as undesirable.

Those who work with difficult clients (such as convicted criminals, troubled youth, individuals with drug or alcohol problems) or those who work with dying patients experience job burnout because of the nature of their work. Nurses, for example, have extremely high turnover rates as a result of the high stress levels associated with this work (Roberts, 1989). Similarly, many jobs involve time pressures, conflicting role demands, and interpersonal communication about undesirable topics. In the Oregon pay equity initiative, the Comparable Worth Task Force added a job factor to its job evaluation system to encompass these job features because of the widely held view among Oregon employees that these job characteristics were undesirable (Acker, 1989). We use a similar rationale for including communication with the public as an undesirable working condition. New York State employees interviewed often complained of the difficulty of dealing with public clients (such as workmen's compensation claimants, unemployed workers, and other distressed citizens seeking government relief and claiming extenuating circumstances) who were often angry and upset (Steinberg et al., 1985).

As noted above, excessive repetition is a feature of work which is often included on lists of undesirable job attributes. Unexpected problems is perhaps the most ambiguous measure on our list, in that one would expect this job attribute to be associated with challenging jobs with diverse responsibilities. Yet New York State employees often complained of this job feature, suggesting that it might be tapping the classic concern of industrial sociologists about the lack of control over one's job (Blauner, 1964). Thus, our approach was to add these measures of undesirable job attributes to the ones conventionally used so as to include any available measure that might be regarded as undesirable by "the marginal employee" in our test of the compensating differentials hypothesis.

The sex and race composition of job titles is an independent variable of particular interest. In several analyses, we contrast female-dominated jobs with white male-dominated jobs. For the purposes of this analysis, white male-dominated titles are defined as those in which 90% of the

incumbents are white and male. Steinberg et al. (1985) found that the proportion minority in a job title had a relatively small, yet discernible, negative effect on the salary grade of the title. Therefore, in order to select a set of job titles unlikely to be affected by gender or race composition, 90% white and male was set as the cutoff point. There are 533 New York State job titles that met these criteria. Female-dominated positions are defined as those in which 67.2% of incumbents are women. This figure is 40% above the proportion of women among all New York State employees, which is 48.4 percent (Steinberg et al., 1985). A total of 297 jobs fell into this category.

Although public sector wage-setting practices may not seem the most appropriate economic context in which to test propositions about the workings of the labor market, we maintain that this setting represents a fair test of the compensating differentials thesis. Government agencies, although lacking external competition, nonetheless have scarce resources and attempt to allocate them so as to deliver services cost-effectively, within political and fiscal constraints (Kelman, 1987). Given this motivation, there is every reason to keep compensation as low as is consistent with adequate staffing and motivation. Data indicate that compensation practices in the public sector are sensitive to wage levels of what are called "key job titles" in the local labor market (Bridges & Nelson, 1988; Remick, Ginorio, & Brtiz, 1987). Further, one out of every five employed women and one out of every six employed men work in the public sector (U.S. Department of Labor, 1983, p. 71). The importance of the public sector and the size of this case study (it is a case employing approximately 170,000 individuals) make it a case of considerable interest. Finally, we believe that testing the compensating differentials hypothesis within one large organization has certain advantages over using national survey data, because we are able to remove the confounding effects on wages of organizational variables (Baron & Bielby, 1980; Berheide & Steinberg, 1989).

We coded extreme cases in two ways: those falling into the top 10% of the distribution, and those falling into the top 5% of the distribution, for each working condition measure. In some cases, the variables were not normally distributed and the top code includes more than 10% of the cases. The results we obtained for these two measures were quite similar, although the patterns for the top 10% measures were somewhat more consistent across models. We consequently report results for the extremes of the distribution with data on the top 10% of the cases.

We coded multiple working conditions scores by adding up the number of undesirable working conditions using the top 10% measure just described. We only included the eight measures found to have a statistically significant effect on earnings: hot or cold, cleaning others' dirt, sick patients, loud noise, strenuous work, repetition, risk of injury, and close supervision. Thus, the multiple conditions scores range from 0 to 8.

Results

Distribution of Job Attributes by Sex Type of Job

Table 4.2 reports the percentage of male-dominated and female-dominated jobs that fell in the top 10% of the distribution for each of 14 job characteristics, along with a composite working conditions factor. Male-dominated jobs were more likely to involve extreme cases of undesirable working conditions than were female-dominated jobs. The sex differences in extreme measures were consistent with the sex differences in the means for all of the variables we considered.

If a broad range of working conditions is investigated, many undesirable working conditions will surface in female-dominated jobs, as well. Male-dominated jobs were more likely to involve hot or cold conditions and exposure to fumes or to require physically strenuous work. Incumbents in these positions were more likely to report that their jobs were stressful, that work required communication with the public, and that they encountered unexpected problems. Female-dominated jobs were more likely to involve cleaning other people's dirt and exposure to loud noise. Women's work involved more encounters with difficult clients and sick patients. Workers in female-dominated jobs reported less autonomy, more repetition, and more supervision. Clearly, many of these working conditions apply to some jobs and not others. Janitorial jobs involve cleaning others' dirt, whereas hospital jobs involve contact with sick patients. How many of these conditions are present in the same jobs? Table 4.3 summarizes how male-dominated and female-dominated jobs stack up in terms of multiple working conditions. For each job, we calculated the number of undesirable attributes that fell in the top 10% of the distribution for that variable. Male-dominated jobs averaged 2.46 extreme working conditions, compared with 2.12 for female-dominated jobs. This difference is statistically significant, but it is perhaps not as

Table 4.2 Means and Standard Errors for Working Conditions and Other Job Characteristics, by Sex Type of Job Title

		White Male Jobs (90%+ White Male) (n = 533)	*Female Jobs (67.2%+ Female) (n = 297)*
Working Conditions Variables		*Percent with High Scores[a] (Top 10%)*	*Percent with High Scores[a] (Top 10%)*
F2*	Unfavorable working conditions (Index)	15.76*	5.72
		(1.58)	(1.35)
MI25	Hot or cold	20.08*	0.67
		(1.74)	(0.48)
MI26	Fumes	13.32*	8.42
		(1.47)	(1.61)
MI27	Cleaning others' dirt	8.44*	13.13
		(1.21)	(1.96)
PI31	Percent loud noise	15.38*	21.21
		(1.56)	(2.38)
MI32	Strenuous physical activity	13.88*	9.09
		(1.50)	(1.67)
MI37	Risk of injury	13.88*	6.40
		(1.50)	(1.42)
F3	Difficult clients	3.38*	18.52
		(7.83)	(2.26)
F4	Communications with the public	19.89*	7.07
		(1.73)	(1.49)
F10	Stress	49.34*	35.70
		(2.17)	(2.78)
F11	Autonomy	16.51*	5.05
		(1.61)	(1.27)
MI28	Working with sick patients	4.13*	21.21
		(0.86)	(2.38)
MI33	Repetition	6.94*	17.85
		(1.10)	(2.23)
MI94	Unexpected problems	13.70	9.43
		(1.49)	(1.69)
MI102	Close supervision	9.94	13.47
		(1.30)	(1.98)

NOTE: Numbers in parentheses are standard errors. The acronyms used here (F13, MI40, and so on) correspond to those used in *The New York State Comparable Pay Study* (Steinberg et al., 1985).
a. The top 10% of distribution of each variable.
*$p < .05$.

Table 4.3 Distribution of Multiple Working Conditions

Working Conditions Variables	*White Male Jobs (90%+ White Male) (n = 533)* *Percent with High Scores (Top 10%)*	*Female Jobs (67.2%+ Female) (n = 297)* *Percent with High Scores (Top 10%)*
Number of unfavorable working conditions, top 10%	2.46*	2.12
	(0.04)	(0.09)
Number of unfavorable working conditions, top 5%	1.98*	1.67
	(0.06)	(0.08)
Number of extreme working conditions		
0	8.26%	22.90%
1	23.45%	30.64%
2	21.39%	20.88%
3	19.89%	12.12%
4	14.82%	9.43%
5+	12.20%	4.04%

NOTE: Numbers in parentheses are standard errors.
*$p < .05$.

large as some might expect. When the analysis is limited to the top 5% of the distribution of working conditions, the results are generally the same as those presented here.

However, differences do emerge when examining the range of working conditions. Of the 533 male-dominated jobs, only 8.3% had no extreme working conditions, as compared with 22.9% of female-dominated jobs. At the other extreme, almost 15% of male-dominated jobs involve four or more extreme working conditions, and over 12% involve five or more, as compared with 9.4% and 4.0% respectively for female-dominated jobs. Some of this discrepancy may be due to the greater percentage of male jobs that reported the highest levels of job stress.

Effect of Extreme Working Conditions

Regression equations that estimate the impact of extreme working conditions on wages are presented in Table 4.4. The first model repro-

Table 4.4 Regression Analysis: Predicting Mean Salary Grade From Job Requirements, Job Content, Extreme Working Conditions, and Sex Composition

Variable		*Model 1* *b*	*Model 2* *b*	*Model 3* *b*
Intercept		4.77***	–0.34	5.03***
		(0.77)	(0.60)	(0.80)
F1	Management/supervision	4.27***	4.59***	4.46***
		(0.38)	(0.40)	(0.38)
F5	Education required	12.08***	12.60***	12.09***
		(0.43)	(0.44)	(0.44)
F12	Consequences of error	1.88***	2.10***	1.61***
		(0.48)	(0.51)	(0.48)
F13	Time effort	1.51**	0.92	1.58**
		(0.53)	(0.56)	(0.53)
Information		4.78***	4.94***	4.95***
		(0.71)	(0.75)	(0.71)
Writing		5.42***	6.82***	5.13***
		(0.76)	(0.77)	(0.76)
MI40	Experience required	7.63***	8.29***	7.57***
		(0.33)	(0.34)	(0.33)
MI74	Filing (combined 74 & 54)	–1.45**	–1.97**	–1.09*
		(0.51)	(0.53)	(0.51)
PI96	Responsible for equipment	0.72***	1.11***	0.63***
		(0.17)	(0.17)	(0.17)
MI25	Hot or cold	–1.56*		–2.32**
		(0.53)		(0.71)
MI27	Cleaning others' dirt	–2.87***		–3.55***
		(0.57)		(0.82)
MI28	Handling sick patients	4.71***		4.45***
		(0.48)		(0.80)
PI31	Loud noise	–1.33**		–1.53***
		(0.42)		(.47)
MI32	Strenuous physical activity	–3.15***		–4.63**
		(0.60)		(0.75)

(Continued)

duces the results we presented in an earlier article (Jacobs & Steinberg, 1990). This model represents the standard for the analysis of working conditions. Each variable is considered to have separate and additive effects on earnings. Moreover, each variable is considered to have an incremental effect throughout its distribution.

Table 4.4 (Continued)

Variable		*Model 1* *b*	*Model 2* *b*	*Model 3* *b*
MI33	Repetition	–2.48***		–2.67***
		(0.48)		(0.62)
MI37	Risk of injury	–1.34***		–1.21*
		(0.41)		(0.51)
MI102	Close supervision	–1.44*		–1.62*
		(0.57)		(0.70)
Top 10% Measures				
MI25	Hot or cold		–0.57*	0.68*
			(0.25)	(0.32)
MI27	Cleaning others' dirt		–1.15***	0.44
			(0.25)	(0.35)
MI28	Handling sick patients		1.46***	0.24
			(0.24)	(0.40)
PI31	Loud noise		0.57**	0.28
			(0.15)	(0.17)
MI32	Strenuous physical activity		–0.46***	0.95***
			(0.26)	(0.32)
MI33	Repetition		–0.85***	0.32
			(0.23)	(0.28)
MI37	Risk of injury		–0.57***	0.21
			(0.24)	(0.28)
MI102	Close supervision		–0.57*	0.02
			(0.23)	(0.27)
PFEM	Proportion women	–2.56***	–1.75***	–2.53***
		(0.25)	(0.25)	(0.25)
R^2		.897	.883	.900

NOTE: Numbers in parentheses are standard errors. The acronyms used here (F13, MI40, and so on) correspond to those used in *The New York State Comparable Pay Study* (Steinberg et al., 1985).
*$p < .05$; **$p < .01$; ***$p < .001$.

Perhaps the most notable result in Model 1 is that most of the working conditions measures have *negative* effects on earnings. Recall that the compensating differentials logic holds that workers receive a wage premium for working in jobs with undesirable attributes. These results indicate the opposite: workers suffer a wage penalty for working in unat-

tractive jobs. It should also be noted that, even after productivity-related-measures and working conditions are controlled, female-dominated jobs continue to pay less than male-dominated jobs.

Model 2 estimates the effect of extreme working conditions, controlling for productivity-related measures. With one exception, these results are consistent with those found in Model 1 and run counter to the compensating differentials thesis. The exception is for loud noise, which changes from a negative to a positive coefficient. All other things being equal, the presence of extreme working conditions typically results in lower pay for a job. In six of the eight cases, extreme working conditions lowered wages.

Model 3 tests the curvilinearity by including both a continuous measure of each working condition and a dummy variable representing an extreme level of this attribute. The results are especially interesting in that they provide limited evidence in support of the notion that the effects of working conditions on earnings is curvilinear. The signs on all the measures of extreme working conditions are positive. In only two cases, however, are the results statistically significant. These results indicate that wages are lower in jobs with undesirable working conditions, but that this wage penalty is sometimes offset when the working conditions reach extremely undesirable levels. The results also indicate that despite the small effect of extreme working conditions on the wages of some jobs, the percentage of women in a job continues to exert a strong negative impact on wages. The coefficient for a job's percentage female is virtually the same in Model 3, compared with Model 1. In other words, these models indicate that the impact of the sex type of a job on wages continues to be strong, independent of other content characteristics. Thus, the sex gap in wages persists, whether or not we take into account the effect of extreme working conditions.

Effect of Multiple Working Conditions

Table 4.5 presents a series of models designed to assess whether the presence of multiple instances of extreme working conditions are associated with a wage bonus or penalty. Model 1 is the baseline model, presented for the purposes of comparison. Model 2 estimates the impact of additional working conditions measures on earnings. Dummy variables were constructed to represent one working condition, two working conditions, and so on through five or more working conditions. The reference category in the analysis is no adverse working conditions. The

Table 4.5 Regression Analysis: Predicting Mean Salary Grade From Job Requirements, Job Content, Multiple Working Conditions, and Sex Composition

Variable		*Model 1* *b*	*Model 2* *b*	*Model 3* *b*
Intercept		4.77***	–2.66***	5.13***
		(0.77)	(0.60)	(0.80)
F1	Management/supervision	4.27***	4.96***	4.27***
		(0.38)	(0.40)	(0.38)
F5	Education required	12.08***	14.02***	12.08***
		(0.43)	(0.44)	(0.43)
F12	Consequences of error	1.88***	2.60***	1.50**
		(0.48)	(0.53)	(0.50)
F13	Time effort	1.51**	0.92	1.38*
		(0.53)	(0.58)	(0.54)
Information		4.78***	5.52***	4.70***
		(0.71)	(0.77)	(0.71)
Writing		5.42***	7.78***	5.39***
		(0.76)	(0.78)	(0.76)
MI40	Experience required	7.63***	8.48***	7.61***
		(0.33)	(0.35)	(0.33)
MI74	Filing (combined 74 & 54)	–1.45**	–1.16**	–1.42**
		(0.51)	(0.54)	(0.51)
PI96	Responsible for equipment	0.72***	1.25***	0.66***
		(0.17)	(0.18)	(0.17)
MI25	Hot or cold	–1.56*		–1.64**
		(0.53)		(0.53)
MI27	Cleaning others' dirt	–2.87***		–3.15***
		(0.57)		(0.58)
MI28	Handling sick patients	4.71***		4.51***
		(0.48)		(0.49)
PI31	Loud noise	–1.33**		–1.41***
		(0.42)		(.42)
MI32	Strenuous physical activity	–3.15***		–3.48***
		(0.60)		(0.60)
MI33	Repetition	–2.48***		–2.61***
		(0.48)		(0.48)
MI37	Risk of injury	–1.34***		–1.47***
		(0.41)		(0.42)
MI102	Close supervision	–1.44*		–1.58**
		(0.57)		(0.57)

(Continued)

Table 4.5 (Continued)

Variable	*Model 1* *b*	*Model 2* *b*	*Model 3* *b*
1 extreme working condition		0.05	0.23
		(0.27)	(0.25)
2 extreme working conditions		–0.18	0.28
		(0.27)	(0.25)
3 extreme working conditions		–0.71*	–0.04
		(.29)	(0.27)
4 extreme working conditions		–0.46	0.74*
		(0.32)	(0.30)
5+ extreme working conditions		–0.97**	0.87*
		(0.32)	(.34)
PFEM Proportion women	–2.56***	–1.08***	–2.63***
	(0.25)	(0.25)	(0.25)
R^2	.897	.875	.898

NOTE: Numbers in parentheses are standard errors. Extreme cases represent the top 10% of the distribution. The acronyms used here (F13, MI40, and so on) correspond to those used in *The New York State Comparable Pay Study* (Steinberg et al., 1985).
*$p < .05$; **$p < .01$; ***$p < .001$.

results in Model 2 indicate that the presence of multiple undesirable working conditions lowers wages. These results, taken by themselves, do not support the compensating differentials logic.

Model 3, however, considers the impact of extreme working conditions, controlling for the continuous measures of working conditions. Here we do we see evidence supporting the compensating differentials perspective. In particular, those jobs with four or five undesirable working conditions are paid more than those with three or fewer such attributes.

Note, however, that the sex gap in wages does not diminish in Model 3 as a result of the observed curvilinear relationships. The net effect of a job's percentage female on its earnings is virtually unchanged between Models 1 and 3. The reason for this finding is that the benefits obtained by the combination of multiple working conditions are not sufficient to offset the cost incurred by each individual working condition. In essence, it is not really that multiple job conditions produce a wage premium so much as that they somewhat reduce the wage penalty associated with

individual working conditions. And, ironically, this specification results in a slightly higher penalty associated with most of the individual job attributes.

Structure, Politics, Culture, Gender, and Wages

Women have had more difficulty than men in translating their skills, experience, and job characteristics into wages. This is not only because women have not achieved equal access to the best jobs in the best organizations, but also because the work in which they are concentrated is undervalued relative to its productive contribution to the work organization. It is also because turnover is viewed as more acceptable in women's jobs than in men's jobs, because women have less power in the politics of wage negotiations in both union and nonunion settings (Acker, 1989; Milkman, 1987), and because women's jobs do not fit neatly into well-established frameworks for evaluating and valuing jobs, developed over many years for historically male work.

Job attributes that are worthy of compensation and characterize women's work are often invisible, just as skills women bring to the workplace are invisible (Steinberg, 1990). This lack of recognition of the characteristics differentially found in historically female jobs extends to the undesirable working conditions found in these jobs. These working conditions are often not captured in standard surveys of work attributes. Women find it more difficult to make a case that these attributes deserve compensation because they do not fit the standard male model of what constitutes an undesirable working condition. The results of this analysis and of our previous study suggest that both men and women find it difficult to make a successful claim that the working conditions in their jobs require extra pay. But the problem is even more difficult for women, because the working conditions found in their jobs—stress, exposure to illness, and so on—differ from the standard categories.

Even when considering the same facet of work, women have more difficulty in making a case that the attributes of their jobs should qualify for compensation. Thus, when people think of risky work, they think of window washers on skyscrapers, of coal miners, of oil-rig operators. They do not typically think of nurses, of dental hygienists, of hospital aides. Consider, for example, what Remick (1984) has labeled male dirt and female dirt. Male dirt is associated with construction work, garden-

ing, and other parks and grounds-related activities, and with infrastructure work involving sewage treatment, boiler rooms, and the like. Female dirt—working with incontinent patients, with blood and other bodily wastes—in hospitals and nursing homes remains invisible, perhaps because of the emphasis placed on maintaining sterile conditions in these contexts. Thus jobs involving female dirt receive neither recognition nor remuneration for working around blood and human waste and for maintaining sterile conditions despite them.

These cultural difficulties are compounded by women's political disadvantages, specifically the underrepresentation of women in unions and in the wage-setting echelons of corporate decision making. As both Acker (1989) and Milkman (1987) illustrate in their case studies, union women's demands were mediated by the priorities of the male membership and leadership. If women could not translate their gender-based demands into class-based demands, they were unable to gain union support for their claims. In nonunion settings, the low wages of women are maintained in part because they have few, if any, institutional channels through which to mobilize their claims. To cite one specific problem, high turnover associated with their jobs does not result in the wage increases for women that it does for men. According to the logic of the compensating differentials hypothesis, working conditions are supposed to influence wages because they influence labor supply. If the job were not worth the trouble, people would leave. But not for women's jobs: In these jobs, high turnover does not result in increased wages. Instead, women are seen as less committed employees, who therefore may be more easily substituted for one another.

This emphasis on political, cultural, and institutional forces in wage setting is consistent with the notion that extreme cases of working conditions may sometimes produce wage premiums. As we maintained in an earlier article (Jacobs & Steinberg, 1990), workers' efforts to receive supplemental compensation for working in undesirable conditions involves a process of conflict in a context of unequal power. Where workers are able to claim that they work under a set of extremely undesirable working conditions, they may be able to translate this claim into a wage premium. Yet, as our results suggest, the undesirable working conditions must be extreme and multiple. Even here, the wage premiums are modest in size. The mechanism producing the wage effect is different from that posited by the compensating differentials thesis, but the results are the same.

Conclusions

The results of this analysis indicate that working conditions do not account for the sex gap in wages. Our analysis shows that male-dominated jobs are more likely to have extreme working conditions and multiple working conditions. Moreover, there is some limited evidence that extreme and multiple working conditions are positively compensated. More specifically, our results show that the wage cost associated with undesirable working conditions is somewhat offset in cases of extreme working conditions and in cases of multiple working conditions. However, these differences do not account for the sex gap in wages. These results are consistent with a political, cultural, and institutional view of labor markets. Further refinements in this alternative view of labor markets are in order.

Appendix: Job Content and Educational Control Variables

		White Male Jobs (90%+ White Male) (n = 533)	*Female Jobs (67.2%+ Female) (n = 297)*
		Mean	*Mean*
F1	Management/supervision	.49	.34
		(.010)	(.012)
F5	Educational requirements	.52	.42
		(.009)	(.012)
F6	Data entry	.37	.42
		(.013)	(.018)
F7	Group facilitation	.34	.20
		(.010)	(.013)
F8	Computer programming	.14	.06
		(.008)	(.006)
F9	Fiscal responsibility	.24	.11
		(.009)	(.007)
F12	Consequences of error	.70	.54
		(.006)	(.010)

(Continued)

Appendix (Continued)

		White Male Jobs (90%+ White Male) (n = 533)	*Female Jobs (67.2%+ Female) (n = 297)*
		Mean	*Mean*
F13	Time effort	.18	.07
		(.008)	(.005)
	Information	.55	.40
		(.006)	(.008)
	Writing	.50	.37
		(.007)	(.008)
MI40	Experience required	.56	.27
		(.011)	(.011)
MI44	Physical coordination	.34	.49
		(.014)	(.020)
MI74	Filing (combined 74 & 54)	.51	.59
		(.008)	(.009)
MI96	Responsible for equipment	.58	.42
		(.011)	(.014)
Other Variables:			
MSG	Mean salary grade	19.66	12.12
		(.289)	(.354)
PFEM	Proportion women	.03	.85
		(.002)	(.006)

NOTE: The acronyms used here (F13, MI40, and so on) correspond to those used in *The New York State Comparable Pay Study* (Steinberg et al., 1985).

Note

1. To us it is curious that economists don't seem to realize that the selectivity argument undermines the claim of an equalizing market. How do some jobs attract better workers than others? Because they are more attractive. But that is precisely what critics are trying to prove: that some jobs are more desirable than others with the same skill requirements. This differential is required in order to generate the selectivity that the economists then use to refute claims of interjob differentials. In other words, selectivity assumes that some jobs are more attractive than others, and some employers are thus in a better position to select from a larger pool of workers than others. The less desirable jobs would have to pay extra to get the identical worker, but they don't.

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